

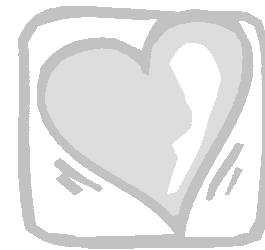


You have been scheduled for a cardiac catheterization. Whether this is your first or fourth one, we want this procedure to be pleasant and informative. We know that anytime the words “heart problems” or “catheterization” are mentioned, it is scary and many questions arise.

This booklet has been prepared to help you:

- Understand how your heart works.
- Understand what Coronary Artery Disease (CAD) is.
- What to expect before, during and after your cardiac cath.

The Cardiologist has explained the procedure in detail to you prior to the scheduling of your heart cath. This pamphlet will answer any additional questions which you may have.



# The Heart

First, let us review to give you a better understanding how a healthy heart works.

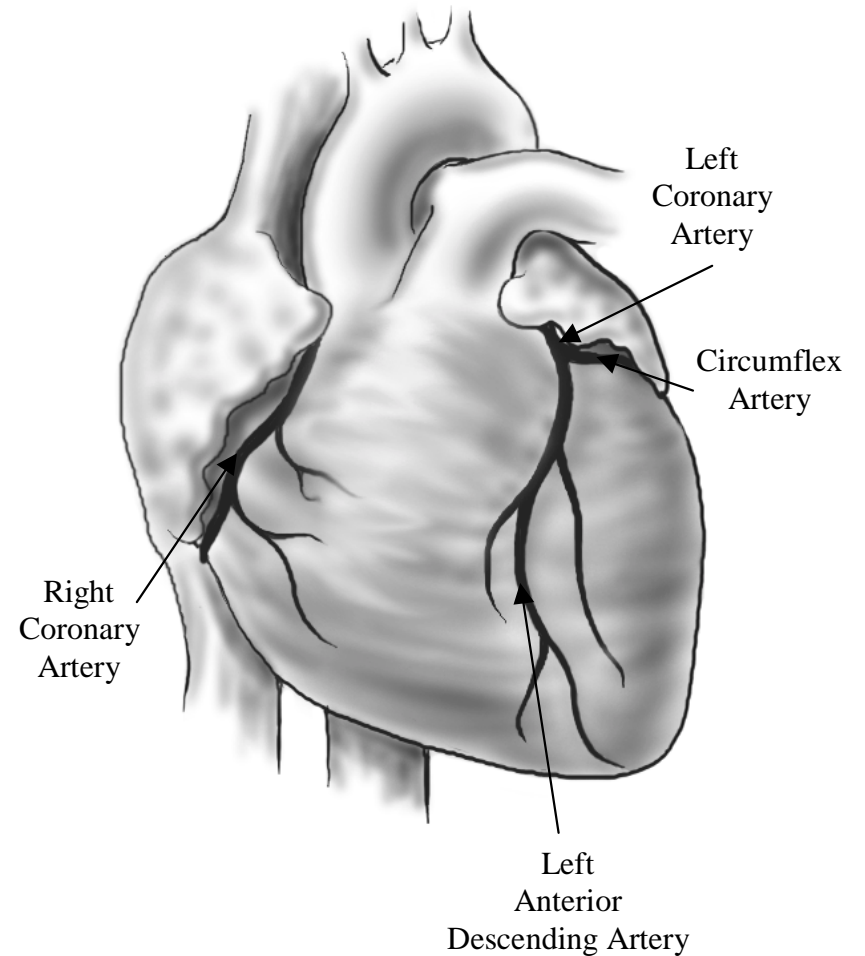
The job of the heart is to pump blood to all parts of the body by way of ***blood vessels*** (elastic tubes) which are called arteries and veins. ***Arteries*** carry blood filled with oxygen and other nutrients to the body; ***veins*** carry “used” blood from the body back to the heart. The heart also sends blood to the lungs where the oxygen we breathe is added to the blood.

Coronary arteries supply the heart muscle with blood and oxygen. There are three main arteries: the Left Anterior Descending (LAD), Circumflex, and Right Coronary (RCA), Arteries. These arteries branch off to supply the entire heart muscle.

In order for the heart to be able to do its work, it must be fed with oxygen-filled blood. The blood vessels, which feed the heart muscles, are called ***coronary arteries***.

**Diabetes:** Diabetes damages arterial walls and can lead to fatty buildup. Since high blood sugar also leads to nerve damage, people with diabetes may not feel symptoms of coronary artery disease.

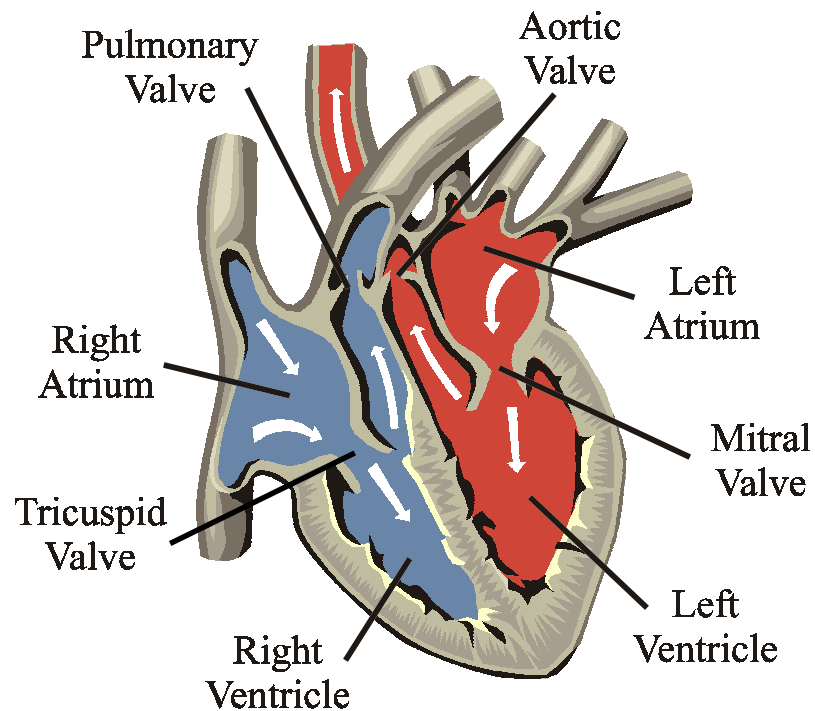
**Stress:** Stress in your life can increase your chances of a heart attack. Stress can cause your heart rate to increase or beat irregular. It can cause increase in blood pressure and cholesterol levels.



**Coronary Artery Anatomy**

The heart is divided into right and left sides and upper and lower chambers. The upper chambers called **atria**, receive blood and pass it on to the lower chambers, called **ventricles**.

The ventricles pump blood out of the heart, the right ventricle to the lungs and the left ventricle to the body. **Blood flow** into and out of the chambers of the heart, is controlled by **valves**. These valves open and close like doors to keep the blood moving in one direction.



your heart and can cause your heart to enlarge and eventually weaken. If you have high blood pressure, always take your medication. It is recommended that you buy a home blood pressure recorder and keep a record to present to your doctor.

**Abnormal Cholesterol:** The cause of blocked coronary arteries is fatty deposits. High cholesterol, high “bad” cholesterol (LDL) and low “good” cholesterol (HDL) causes the build-up of fatty deposits in coronary arteries. Abnormal cholesterol levels may be genetic or caused by eating too much high fat foods. A dietitian can help you learn how to follow a “heart healthy” diet.

**Weight Control:** Studies have shown that people who weigh more than 20% over ideal body weight are more likely to develop Coronary Artery Disease because obesity affects blood pressure, blood cholesterol levels and can be associated with diabetes.

**Exercise:** Exercise is an important part of weight control. An active lifestyle with regular aerobic exercise can condition your heart and lungs so they work efficiently. Exercise also helps control other risk factors for heart disease.

## Taking Control

It is important for patients with CAD to know their risk factors so they can do something to decrease the risk of their disease getting worse. It is important to change any behaviors that may have contributed to your heart problem.

Risk factors for Coronary Artery Disease include smoking, high blood pressure, high levels of fatty substances in the blood (cholesterol & triglycerides), excessive weight, lack of exercise, and stress. Other risk factors are diabetes mellitus and family history of heart disease.

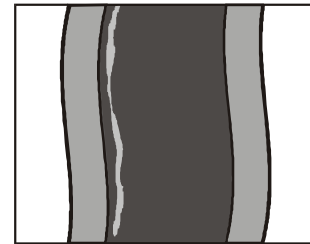
**Smoking:** Smoking makes it easier for fat and cholesterol to line the coronary arteries. Nicotine speeds up your heart rate, harms the lining of your arteries and provides less blood and oxygen to the heart. No one says that quitting is easy. But everyone says it's worth it. Quitting will drastically reduce your risk of heart and blood vessel disease.

**High Blood Pressure:** High blood pressure can cause damage to the lining of coronary arteries. When the lining is injured, fat and cholesterol easily sticks to the walls and can cause blockages. High blood pressure also increases the work of

## What is Coronary Artery Disease?

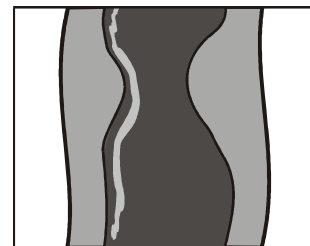
Having **Coronary Artery Disease** (CAD) means that the inside of one or more of your coronary arteries has become narrowed, or blocked with fatty deposit, calcium or other materials.

Because of this narrowing, part of your heart does not always get enough oxygen-filled blood to do its work (see diagram). This usually causes chest discomfort, shortness of breath, pressure, or pain. If you have experienced any of these sensations, your doctor has probably referred to this discomfort as ***angina***.



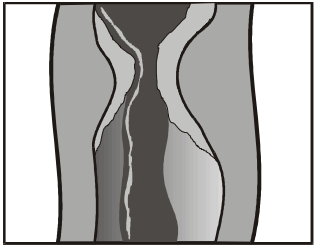
### **Healthy Artery**

In healthy arteries, blood and oxygen flow easily to the heart muscle.



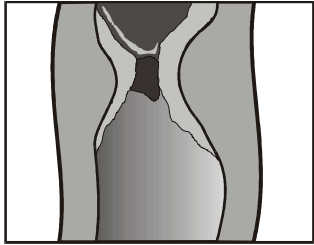
### **Narrowed Artery**

In narrowed arteries, blood flow to the heart muscle is partially blocked. Therefore, you may experience angina.



### **Damaged Artery**

As plaque forms, blood flow to the heart muscle is reduced.



### **Blocked Artery**

**When blood and oxygen to the heart is completely blocked by plaque or a blood clot, a heart attack may result.**

## What is a Cardiac Catheterization?

**Cardiac catheterization** is a procedure that has been around for many years. It is a special x-ray study of the heart. A flexible narrow plastic tube called a catheter is inserted into a vein or artery in your arm or leg (groin).

The **catheter** is then passed through the blood vessel into a heart chamber or to a coronary artery. Special x-ray dye, called **contrast**, is injected which allows the doctor to see the chambers, valves or coronary arteries in your heart on a x-ray television (monitor) screen. Pressures within the heart will be measured and blood samples will be drawn.

### Additional Home Teaching:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

♥ **DIET:** Drink lots of fluids during the first 4 hours after your discharge.

- Do **NOT** drink alcoholic beverages for 24 hours after your procedure.
- Resume your normal diet unless instructed otherwise.

♥ **MEDICATION**

- Resume your normal medications or as directed by physician

♥ **OTHER**

- Do not drive or operate machinery for 24 hours.
- If you have questions, or need to report problems, call Cardiology at (937) 268-6511, ext. 2725 or 3172, until 4:30 p.m. After 4:30 p.m. call (937) 268-6511 and ask the operator to page the cardiology doctor on call. If calling long distance, dial 1-800-368-8262.

## **Information Obtained From Cardiac Cath**

- Detailed anatomic and functional data to assist your doctor in the management of your care.
- Determination of the presence and severity of blockages in the coronary arteries.
- Evaluation of the function of the main pumping chamber (left ventricle) of the heart.
- Evaluation of the function of the heart valves.
- Evaluation of possible congenital abnormalities.
- Assessment of damage done to the heart and valves from previous heart attacks, infections, and/or trauma.
- Assessment of the status of bypass grafts.
- Evaluation of the function of the heart in relation to surrounding tissue.



## Pre Cath Preparation

Preparation for your cardiac cath will include several important steps. The doctor or nurse will ask you questions regarding your medication, diet, activities, and allergies. **Be sure to mention if you are allergic to fish, seafood, iodine or have had an allergic reaction during or after an x-ray procedure where dye was used, or if you are allergic to xylocaine at the dentist's office.**

Your doctor will describe possible risk and side effects of having a cardiac cath. You will then be asked to sign a consent authorizing this procedure to be performed. The risks of cardiac catheterization are low. They are usually outweighed by the benefits of knowing the exact condition of your heart.

Possible risks include:

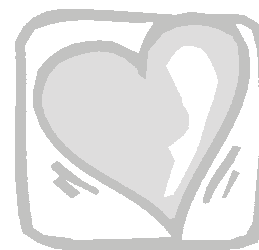
- Bleeding or formation of clots at cath site
- Perforation of the heart muscle or blood vessel
- Abnormal heart beats; fast/slow heart rate
- Allergic reaction to the dye used for x-ray pictures
- Stroke
- Heart attack
- Death

Notify the doctor if you have problem with the leg/arm where the catheters were inserted, such as:

- a. numbness
- b. change in color
- c. change in skin temperature
- d. swelling at the site where procedure was done
- e. intense pain in the area of the cath site

## ♥ BATHING

- Do not shower until the morning after your test.
- Take the pressure bandage off in the shower.
- Do not SCRUB insertion site.
- You may place a band-aid over site for 2 days.
- Avoid tub bathing for 2 days.





## ♥ WHAT TO EXPECT AT THE PUNCTURE SITE

- It is not unusual to have some mild tenderness or discomfort where the catheters were inserted, but if you have a lot of discomfort, notify the doctor.
- You may develop a lump the size of a quarter. It is common to have a few drops of blood, from the site, on the bandage the night of your procedure. The bandage should **NOT** be saturated.
- If bandage suddenly becomes saturated with bright red bleeding, lie down and apply direct pressure to the site and report to the Emergency Department to have site checked.
- If you have signs of infection, notify the doctor. Signs to report include:
  - a. fever
  - b. chills
  - c. drainage from the site
  - d. redness at site

Please be sure to ask questions at this time. We want you to be well informed about your cardiac cath procedure.

You will have a baseline blood test drawn.

1. CBC
2. Renal panel
3. PT & PTT
4. Chest X-ray if not done within past year
5. EKG (within 7 days of procedure).

The doctor will provide you with written instructions for your procedure. He will also instruct you on which medications to take the day of your cardiac cath.

Some general instructions:

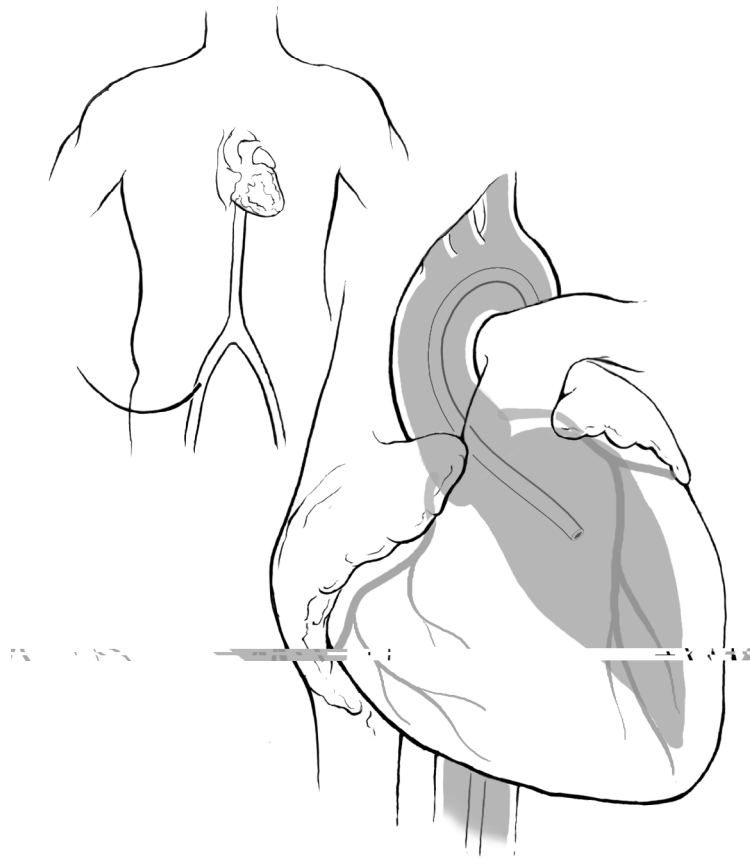
- Do not eat or drink anything after midnight the night before your procedure.
- You may have sips of water to take your prescribed medications.
- Bring all prescribed medications in their prescribed bottles, the day of your procedure.
- Take a shower and wash your hair the night before your procedure.
- Notify the doctor of current chest pressure/pain, the day of your procedure.

## Discharge Instructions

The nursing staff will review with you these discharge instructions. Although the initial observation period is over, you should take some precautions. Most patients do not have problems after heart catheterization. However, there are a few things to keep in mind...

♥ **ACTIVITY:** Use minimal activity for the rest of the day.

- Do not lift or push more than 5-10 pounds the first 2 days after the procedure.
- You may resume normal activities the next day but avoid strenuous activities for 4 days.
- Do not sit for more than 1 hour without getting up and moving around for the first 2 days following your procedure.
- On the way home, lie as flat as possible, ride in the back seat with affected cath site straight.



**Example of Cardiac Catheterization**

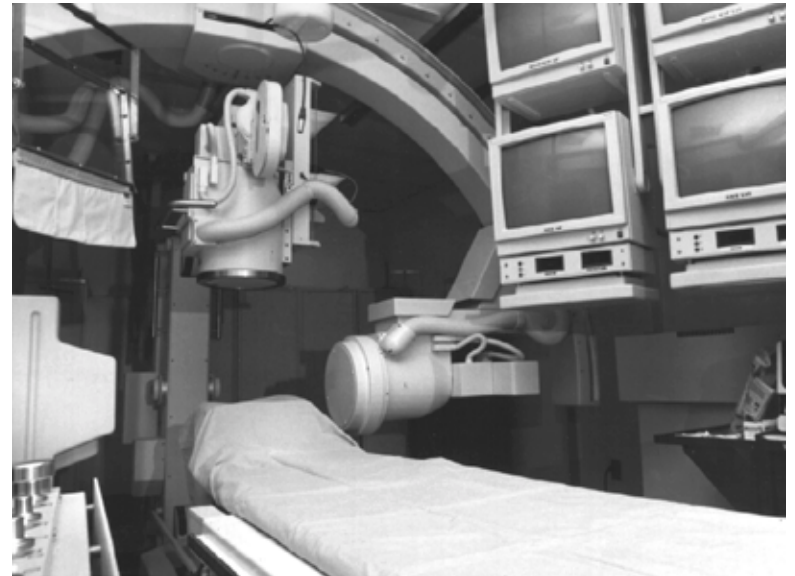
You will be asked to drink plenty of fluids during your entire recovery period. This will help flush the contrast out of your system.

### **IMPORTANT INSTRUCTIONS FOLLOWING YOUR PROCEDURE!**

- Do not raise your head off the pillow. (When you do this, you contract your abdominal and femoral muscles, and could break loose the clot at the cath site, when groin site used.)
- Hold your puncture site when sneezing or coughing (when groin site used).
- Keep the puncture site straight. (Bending your groin/arm can break loose the clot.)
- Do not elevate the head of your bed greater than 30° (when groin site used).
- You can roll from side to side, keeping the puncture site straight. You can bend the unaffected leg.
- Hold pressure on puncture site and call the nurse if you feel something warm and moist at your cath area. (You are most likely bleeding.)
- The nurse will assist you when you get up for the first time, after your bed rest period is finished. (Notify the nurse if you get dizzy or light headed.)
- Notify the nurse if you have discomfort in your affected cath site (coldness, numbness, or pain.)
- You should not experience chest pain or shortness of breath; if these symptoms occur notify your nurse.

## **The Day of Your Cardiac Catheterization**

Cardiac caths are done in a room called the Cath Lab. This room contains equipment used for your procedure, including moving x-ray cameras, TV monitors, a computer, and a heart monitor. This room will feel very cold; the temperature is kept low because of the special equipment.



**Cardiac Cath Lab**

You will be scheduled for your cardiac cath as an outpatient, unless you are already hospitalized. It is important to arrange to have someone drive you to the hospital and home after the procedure.

You will report to the Ambulatory Surgery Department, the morning of your procedure. There you will have an IV started in your arm and IV fluids will be given. You will be asked to urinate to empty your bladder prior to being transported to the cath lab. You will be transported to the cath lab by stretcher. Your family can wait for your test results, in the ICU waiting room, located on the 3<sup>rd</sup> floor.

After the sheath is inserted, the doctor will be ready to proceed with the actual catheterization. This should take anywhere from 15-20 minutes. (It will take longer if you have had bypass surgery, because there are more vessels to look at.)



## After The Cardiac Cath

After the procedure is completed, you will be helped back on your stretcher, moving very carefully. (You will still have your sheath in!)

You will be taken to our holding area, where one of the cath technicians will remove your sheath and pressure will be held on your groin/ arm to stop any bleeding. Pressure will be held for approximately 10-15 minutes (this time may vary). Then a pressure dressing will be applied. A sandbag will be placed over the insertion site and remain in place for several hours.

Your heart and blood pressure will be monitored during this period. During the time, you are with the nurse or technician, he/she will instruct you on things you must **not** do during the next 4-6 hours of bed rest.

## Post Cath Instructions

You will be taken back to Ambulatory Surgery Department, where you will be moved to a hospital bed. You will be watched carefully after the procedure. A Nurse will check your blood pressure and cardiac cath site frequently to make sure there is no bleeding.

helps to get a clear picture. Occasionally you may feel your heart fluttering or skipping beats. Do not be alarmed, as this is only temporary. Your cooperation will help get the procedure done more quickly.

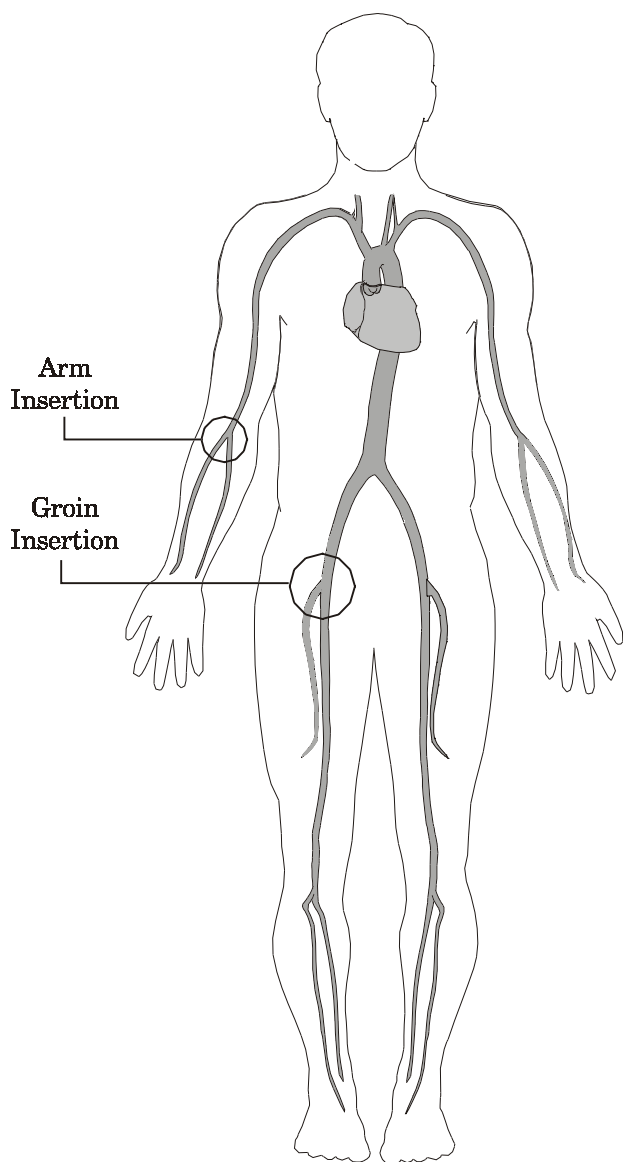
When you are asked to hold your breath, you will probably hear the camera taking a picture. The noise of the camera may sound like that of an electric motor. You may also be asked to cough several times after a picture is taken. This helps to move contrast out of the heart.

When the dye is injected, you may feel hot and flushed all over for a few seconds. You may also get a headache, notice a funny taste in your mouth, or feel sick to your stomach. These are normal reactions and will pass. If you have any chest discomfort or angina, you should tell the doctor immediately.

After the procedure is completed, the doctor will discuss the results and treatment options with you and your family. Often, the cath film will need to be reviewed before the doctor can give you a full report.

## **Welcome To Our Lab**

- ♥ First, the site that will be used (upper arm or upper leg) will be shaved prior to entering the lab. (See diagram on next page.)
- ♥ Prior to the Cath, you will be given medications to help you relax.
- ♥ Your pulses below your cath site will be checked and marked prior to the procedure. The pulses will be checked frequently after the cath and this will help everyone to check them in the same location.
- ♥ EKG electrodes will be placed on your chest wall, which will enable us to monitor you very closely during the procedure.
- ♥ An automatic blood pressure cuff will be placed on your arm so we can monitor your blood pressure. The cuff will automatically inflate every 5 to 10 minutes.
- ♥ A pulse oxygen meter will be placed on your finger; we use this machine to monitor your breathing. If your pulse oxygen reading is low, oxygen will be given to you.



**Cardiac Cath Insertion Sites**

- ♥ The procedure site is cleansed with an antiseptic solution. This solution helps prevent infection.
- ♥ A sterile drape will be placed over your entire body. Please keep your hands at your side, do not touch this area or on top of the drape.
- ♥ To begin your cardiac cath the doctor will use a numbing medicine called Xylocaine. You should not feel pain, only a “little prick” and pressure at the site.
- ♥ When the area is numb, another needle will be used to pierce the skin of your arm/leg in order to enter the artery or vein.
- ♥ Next, a short hollow plastic tube (introducer) will be put into the vessel, through which the diagnostic catheters will be inserted.
- ♥ You may feel some pressure when the introducer is inserted.

During your cath, the doctor will need your help. Your arms will be placed above your head to allow for a clear picture of your heart. At times, the doctor may ask you to take deep breaths; this helps the catheter move more easily into your arteries. At other times, you will be asked to take deep breaths and hold it for several seconds. This